AMENDMENTS TO THE SPECIFICATION

Please amend the following paragraphs:

[0006]   In the prior art, there is a known technique of filtering fluoroscopic noise. In this technique, a temporal mean is taken between the value of two points, or pixels, having the same coordinates in two images. The two images belong to one and the same sequence of images representing one and the same region. The two images have the same framing and parameters of exposure but are taken at different [[dates]] times. If an image I is filtered at the [[date]] time t, then, for each pixel of the image I, a mean is taken with the corresponding pixel of the image I' obtained at t-1.

[0007]   This method has several drawbacks. A first drawback lies in the low reduction of noise in the filtered image. This reduction is of the order of $\sqrt{2}$ at most. A second drawback lies in the problem of remanence, or the appearance of phantoms in the filtered images. Consider the acquisition of images of an artery into which it is known that a guide has been inserted. A guide is a cylindrical metal object that is introduced into the artery and is therefore visible in radiography. Given that the guide moves at high speed, it is possible that it will be present in the imaged zone at the [[date]] time t-1, but not at the [[date]] time t. However, since the image filtered at the [[date]] time t is obtained by taking the average of the image acquired at the [[date]] time t and the image acquired at the [[date]] time t-1, a filtered image is obtained for the [[date]] time t, and this filtered image shows a guide which, nevertheless, was not present at this [[date]] time. Thus, an erroneous piece of information has been added to the image of the [[date]] time t.

[0026]   Figure 1 shows that the filter accepts an input of at least up to five parameters or inputs. In an embodiment of the invention, filter 101 may be considered as an apparatus implementing the method. A first input is an image 102, to be filtered, taken at a [[date]] time t. An image of this kind may have characteristics as illustrated in Figure

3. Image 102 can be likened to a bitmap image. Image 102 is a digital image delivered
by the image acquisition apparatus or obtained from signals delivered by the apparatus.
Each pixel of the image 102 is identified by its coordinates (x,y) and by an intensity
$I(x,y)$. The intensity is equivalent to a grey level. The dynamic ranges of x,y and I
depend on the detector used by the image acquisition apparatus. In general x varies from
0 to Xmax, and y varies from 0 to Ymax. Xmax and Ymax then define the resolution of
the image. $I(x,y)$ represents the value of the pixel having coordinates (x,y), i.e., its grey
level I varies from 0 2 Imax.

[0027]   Filter 101 also accepts an input image 103 taken at the [[date]] time t-1.
Image 103 belongs to the same image sequence as the image 102. In the image sequence,
the image 103 occupies the place preceding the image 102. Images 102 and 103 have the
same definition and represent the same region of space. In a variant embodiment of the
invention, image 103 is the result of the filtering, of the image taken at the [[date]] time t-
1. A sequence of images is obtained during an examination by taking several successive
shots of one and the same region, as would be done by a video camera. Image sequences
of this kind are found when it is sought to image an organ or a region of an organism,
during a cycle. Examples of cycles are the heart cycle, the respiratory cycle, or an
arbitrarily fixed period of time.

[0034]   As an output, the filter 101 produces an image 106 corresponding to the
filtered image 102. Image 106 is reused as the image 103 for the processing of the image
required at the [[date]] time t+1.

[0035]   Figure 4 shows a preliminary image acquisition step 401. An embodiment
of the invention works optimally with two images belonging to one and the same
sequence of images. However, it also works with only one image: this is the particular
case where γ equals 1. And a scanner type image acquisition apparatus produces image
sequence. The acquisition starts at an original [[date]] time that is written as t0 and is

Page 3 of 23

arbitrarily equal to 0. For each [[date]] time tn, the image acquisition apparatus produces an image. All the images produced have the same definition. If not, it is seen to it that the image with the greatest definition has its definition reduced to that of the image with the smallest definition. The images can be available in digital form. As described here, each pixel of an image then has coordinates (x,y) and an intensity I(x,y) equivalent to a gray level.

[0036]   Step 401 proceeds to step 402 for processing the image t-1. In the present example and as embodiment, a description shall be given of the processing of the image acquired at the [[date]] time t > t0. Step 402 therefore enables the production of the image 103 used by filter 101 to process the image 102 acquired at the [[date]] time t. Step 402 is identical to what will be described for the processing of the image acquired at the [[date]] time t in the step 403.

[0037]   When the filtering is initialized, i.e., when the image acquired at the [[date]] time t0 is processed, there is no image t0-1 to play the role of the image 103. In the case of the first filtered image, either γ is fixed at 1, or the image acquired at t0 is not filtered. Not filtering this image amounts to considering it to be a good image and using it as such in the role of the image 103 for the filtering of the image acquired at the [[date]] time t0+1.

[0038]   Step 402 proceeds to step 403 for the processing of the image I acquired at the [[date]] time t. Step 403 comprises several sub-steps. An image is processed pixel by pixel. In step 404, initiating step 403, the operation therefore starts with the initializing of the processing: the operation takes position on the first pixel to be processed. In the present example, it is considered that this is the pixel (0,0). More generally, description of the processing of the pixel having coordinates (x,y). Step 404, the operation proceeds to step 405 for the computation of the values Up(k,l) for the pixel having coordinates (x,y).

[0039]   Step 404 is the step in which the coefficients U(k,l) of the core U are weighted as a function of the neighborhood of the pixel with coordinates (x,y) in the image I acquired at the [[date]] time t. The neighborhood of a pixel with coordinates (x,y) in the image I is formed by the D^2-1 pixels of the image I closest to the pixel with coordinates (x,y). The pixel with coordinates (x,y) has an intensity or gray level, I(x,y) in the image I. The result of this weighting is a core Up having coefficients Up(k,l). For the pixel with coordinates (x,y) the coefficients Up(k,l) are obtained with the following equation:

[0042]   Step 405, the operation goes to step 406 in which the coefficients U(k,l) of the core U are weighted as a function of the neighborhood of the pixel with coordinates (x,y) in the image I acquired at the [[date]] time t. The pixel with coordinates (x,y) has an intensity or gray level, I'(x,y) in the image I'. The result of this weighting is a core Up' having coefficients Up'(k,l). For the pixel with coordinates (x,y) the coefficients Up'(k,l) are obtained with the following equation:

[0053]   At step 410 it is ascertained that the image sequence comprises an image t+1 to be processed/filtered. If this is the case, the operation passes from step 410 to step 403 with the difference that the processed image is no longer the image acquired at the [[date]] time t, but the image acquired at the [[date]] time t+1, and so on and so forth with t+n, so long as there are images to be processed.